the loads that cause it to rotate. When the bearing housing **226** is tightened to the structural mounting plate **240**, a "crown" (difference between the uncompressed thickness and the totally compressed thickness) of the Belleville spring washer **254** which protrudes above the mounting surface **270** of the support wall **240** by a known amount, is compressed, a force is applied to the side of the bearing **220** through the spacer ring **244** and a reaction force is applied to the ledge **290** by the lip **280** of the housing **226**.

The thickness of the steel spacer ring **244** determines the amount of compression of the Belleville spring washer **254**, and assures that the force from the compressed Belleville spring washer **254** is evenly distributed around the peripheral side surface of the outer race of the bearing **220**. The width of the steel spacer ring **244** is set so that there is no interference with the rotation of the bearing **220** inner race and shaft **122**. For example, the 10 Ga. thick spacer ring **244** used with the bearing **220** part #F4B-IP-107 and Belleville spring washer **254** part #80-41-4 sized to allow 100% deflection of the washer would produce a force of 6617 lbs., while the 7 Ga. thick spacer ring **244** used with the bearing **220** part #F4B-IP-107 and Belleville spring washer **254** part #90-46-5 sized to allow 100% deflection of the washer would produce a force of 9292 lbs.

Thus, a set axial preload on the end surface of the outer ring of a bearing is used to prevent the bearing from rotating within the cavity of the bearing housing.

Although the bearings are illustrated with respect to a particular vibratory conveyor illustrated in FIGS. **1** and **2**, other types of machines which utilize bearings and bearing housings can incorporate the bearing assembly of the present invention.

The invention provides a method of fixing a bearing within a bearing housing to prevent rotation thereof, which comprises the steps of:

- providing a bearing housing **226** having a radial surface **292** and a base end;
- providing a bearing **220** having a radial surface **282** and a trailing end surface **248**;
- inserting the bearing **220** into the housing **226** with the radial surface **282** facing the radial surface **292**;
- placing a spring element such as a spring washer **254** into the housing facing toward the trailing end surface;
- providing a support wall **240** adjacent to the bearing housing base end capturing said bearing **220** and said spring element **254** between the radial surface **292** and the support wall **240**; and
- forcibly drawing the housing to the support wall to resiliently press the radial surfaces together under force from the spring element.

The method can also comprise the further step of, before placing the spring element into the housing, placing a spacer ring **244** against the trailing end surface **248** of the bearing **220**, the spacer ring having an inside diameter greater than an inside diameter of the washer.

The method step of placing the spring element can be further defined in that the spring element comprises a compressible washer.

The method step of forcibly drawing the housing to said support wall can be further defined in that at least one first portion mechanically associated with the housing and at least one second portion mechanically associated with the support wall have a male-female interengaged threaded relationship, and by relatively turning the first and second portions, the housing is drawn to the support wall.

The method can also include the further step of inserting a shaft into the bearing, through the washer and through an opening of the support wall. The method can include the further step of attaching the support wall to a structure, such as a machine wall, for supporting the shaft.

From the foregoing, it will be observed that numerous modifications and variations can be effected without departing from the true spirit and scope of the novel concept of the present invention. It is to be understood that no limitation with respect to the specific embodiment illustrated herein is intended or should be inferred. The disclosure is intended to cover, by the appended claims, all such modifications as fall within the scope of the claims.

The invention claimed is:

1. A vibratory conveying apparatus, comprising:

a trough for conveying pieces;

at least one shaft, rotation of said shaft transmitting vibratory forces to said trough;

a structure for supporting said trough and said base;

at least one bearing assembly, supporting said shaft and mounted to said structure, said bearing assembly including a bearing having a central opening for receiving said shaft and having at least one first radial surface, a bearing housing having a surrounding wall defining an open distal end and an open base end, and having at least one second radial surface connected to said surrounding wall, a support wall arranged adjacent said open base end of said housing, at least one male thread formation and at least one coacting female thread formation associated respectively with said bearing housing and said support wall, said housing drawn toward said support wall when said male thread formation is advanced along said female thread formation, and a spring element arranged between said support wall and said bearing to resiliently press said at least one first radial surface to said at least one second radial surface when said male thread formation is advanced on said female thread formation, the support wall being mounted to said structure.

2. The vibratory conveying apparatus according to claim **1**, wherein said spring element comprises a frustoconically-shaped washer.

3. The vibratory conveying apparatus according to claim **1**, wherein said spring element comprises a frustoconically-shaped washer having an outer edge and a central hole defining an inner edge, said washer oriented to extend in a radial direction from said outer edge toward said inner edge obliquely toward said support wall, and comprising a spacer ring arranged between facing surfaces of said bearing and said washer, said spacer ring sized to be pressed against an outer annular surface area of said washer which is adjacent to said outer edge of said washer.

4. The vibratory conveying apparatus according to claim **1**, wherein said first radial surface comprises an annular ledge of said bearing which faces away from said support wall, and said second radial surface comprises an annular lip that extends inwardly from said surrounding wall of said housing.

5. The vibratory conveying apparatus according to claim **1**, wherein said support wall comprises a plate having a rectangular perimeter.

6. The vibratory conveying apparatus according to claim **1**, wherein said support wall is formed by a wall of a machine.

7. The vibratory conveying apparatus according to claim **1**, wherein said at least one male thread formation and at least on female thread formation comprise a plurality of threaded fasteners and corresponding threaded apertures.